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sketch of him is "put in terms of Americanism just as if describing an American public man." All the conversations reported have the tone of frankness and the interest of the impromptu spoken word.

To those who love eye-witness and ear-witness reports, *What is Back of the War* will furnish a feast; it is emphatically a book to read if one wishes to get a lively and intelligent impression of the European scene in war time. Perhaps the most interesting chapter, however, is that which is devoted to probabilities. In brief, Senator Beveridge is convinced that the war is everywhere strengthening the forces of democratic collectivism—that its final outcome will be a more or less thorough reorganization of European life upon this basis.

ANIMAL EXPERIMENTATION AND MEDICAL PROGRESS. By William Williams Keen, M.D., LL.D. Boston and New York: Houghton Mifflin Company, 1914.

The reader who is not an antivivisectionist can scarcely peruse Dr. Keen's succinct and informing account of medical progress during the last five decades without wondering that the author should have been forced into a controversial attitude by the attacks of furious sentimentalists. That there is need of protest, however, against that perversion of humane feeling which would sacrifice the whole to minor parts, is amply attested. Dr. Keen's references to antivivisection documents and his careful analyses of some of them seem to show on the part of certain opponents of animal experimentation a determined, unreasoning hostility which uses logic, rather blindly, as a weapon of offense, but falls back ultimately upon the appeal to feeling. Nothing can justify vivisection—that is the final attitude of one group of extremists. The others are logically constrained either to deny in large part the value of serum-therapy and other results of medical research—most of which have been achieved through animal experimentation—or to propose the shockingly cruel alternative of experiment upon human beings.

Those who deny or minimize the value of modern surgical progress are prone to overlook certain important facts, and, indeed, the ordinary reader, it may be suspected, has but an inadequate notion of the rôle which animal experimentation has played in saving human life. Serum-therapy tells less than half of the story. It is true that the progressive introduction of the antiseptic system was practically "one vast experiment in the human living body." This experiment, as all the world knows, was justified by its results. To us, nowadays, it may seem that Lister in experimenting with antiseptics upon a living human being ran no risk. Every departure, however, from accepted practise is a risk, and had the results been unfavorable the world might well have regretted that Lister was not permitted to try his first experiments in antiseptic surgery upon animals. Later,

when he was seeking for a form of ligature that would not produce suppuration—as the silk thread then in use nearly always did—he actually made use of animals in his initial experiments. Thus, so elementary a matter of surgical knowledge as the proper way of tying an artery was acquired through animal experimentation—and the wholly successful issue of the attempt should blind no one to the fact that to make the first trial upon a human being would have been to take an unjustifiable risk.

An especially helpful class of experiments upon living animals are those which have enabled surgeons to localize approximately the functions of the brain. The case of Midshipman Aiken, as related by Dr. Keen, is instructive. This young man, as the result of an injury received in a football game, developed violent convulsions, first in the right leg, afterwards in the right arm also—the arm being finally the seat of the convulsions. The only physical indication of any injury was a very slight bruise at the outer end of the left eyebrow. “Had I seen this case before 1885,” writes Dr. Keen, “I should have been unable to explain why the spasms were chiefly manifested in the right arm, and from the evidence of the slow pulse, the headache, the stupor, the bruise in the left temple, I should have been justified in inferring that probably the front part of the brain was injured at the site of the bruise. Had I opened the skull at that point, I should have found a perfectly normal brain and should have missed the clot. The young man, therefore, would have died, whether his skull had been opened or not.” But in 1902, the year in which Midshipman Aiken was injured, the location of the “arm-center” in the brain—the center affected in this case, as the convulsions of the patient’s arm plainly showed—had been precisely determined as a result of humanely conducted experiments upon living animals. Precisely under the spot in the skull thus indicated was found the expected clot of blood. This removed, the patient promptly recovered. He resumed his work in the Naval Academy, studied hard, graduated with his class, and entered the navy. This and a number of similar cases should effectively dispose of the contention that nothing of value concerning the human body can be learned from experiments upon animals.

But in point of fact, nearly every important innovation in surgery throughout the last fifty years has been proved safe and practicable through preliminary experiments upon animals. The list includes operations upon the stomach, the kidneys, the liver, the lungs, and many other feats of surgical skill by which human life has been repeatedly saved, though all were at one time thought impossible. The triumphs of modern surgery as narrated by Dr. Keen make an inspiring story, and the truth as to the manner in which the notable advances of recent years have been achieved should be better known than it is.